Industrial Finishing

Reg. U. S. Pat. Off.

An Independent Publication Devoted to the Finishing of Industrial Products

Vol. VIII, No. 10 **AUGUST, 1932** **$2.00 a Year**

Contents of this Issue

From the Editor's Desk 5

Feature Articles

To Meet New Conditions, by E. F. Werner 9
New Furniture Designs and Finishes, by R. G. Mead 12
Selection and Use of Wood Putty Fillers, by C. Dan Youngs .. 17
Automatic Spray Guns, by Wm. J. Miskella 19
Finishing Kelvinator Refrigerator Cabinets, by Charles C. Thomas 24
Modernized Japanning, by Hale A. Clark 30
New Materials and Equipment 40
"Questions and Answers" Section 43

"New Materials and Equipment" Section 40
Improved Fluid Hose 40
Duco Polishing Wax 40
Wood Putty Filler 40
Two-Ply Stainless Steel 42
"Hydrowax Liquid" 42

"Questions and Answers" Section 43

Short Articles

Letters 4
Change Colors Occasionally 11
Treating Rush or Fiber Chair Bottoms 15
New Previous-Metal Coating 15
Steamship Interior Decoration 16
Fan Shutters Automatic 18
Free Book About Brushes ... 18
Coloring With Hot Sand 22
Conway Joins Cook Paint & Varnish Company 22
Transfers Adhere to Cloth. 28
Spots Air Line Trouble 38
Room Cooler Bulletin 38

"Classified Advertising" Section 46

Advertisers' Index 47

Copyright, 1932

Published by PRACTICAL PUBLICATIONS, INC., 802 Wulsin Bldg., Indianapolis, Ind.

Eastern Representative—C. A. Larson
254 West 31st St., New York
Phone, Penna. 9049

Western Representative—H. L. Watrous
423 Maple Ave., Winnetka, Ill.
Phone, 904

PAISPEARL ESSENCE

"Standard of Quality"

Made by
Our Patented Process

A beautiful Pearl finish offers an irresistible sales appeal.

Try Paispearl with your lacquers and see for yourself.

PAISPEARL PRODUCTS, INC.
65 Nassau St. New York, N. Y.

Prompt deliveries on any quantity

A generous sample of New Improved

is yours for the asking

Wood Dough is pliable like putty —but sticks like glue. It is the ideal plastic wood putty for many uses.

Many large concerns buy it in 300-lb. barrels. It is mixed as used, with hot or cold water, and positively will not shrink. Hardens quickly; can be sanded and finished same as wood.

Write for free liberal sample and schedule of attractive prices.

O. R. PLATTER

North Vernon Indiana

Letters

Lacquer Characteristics; Finger Nail Polishes

We are interested in learning a few things about lacquers that undoubtedly hold good for nail polishes. Of the various properties of a lacquer, there are certain ingredients which produce them. Can you refer us to some literature or tell us what constituents produce the following properties:

1—Gloss
2—Quick Drying
3—Adhesiveness
4—Flexibility
5—Waterproofness
6—Durability
7—Covering Power
8—Color

Any help you can give us will be appreciated.—S.B.I. (Manicure Outfits).

Several articles covering these points, have appeared in past issues of I. F.—Editor.

Crystals of Guanin

In article concerning Pearl Essence, on page 16 of the July issue of INDUSTRIAL FINISHING, I would like to know what natural crystals of guanin are, and from what natural source they are obtained.—H.W.M. Co. (Steel Products).

Quoting H. E. Mattin on "Pearl Essence Lacquers," Jan. 1932, issue, pages 13 and 14: "The pearl essence used in certain decorative finishing materials is a product obtained from fish scales. . . . The popular idea is that pearl essence is ground 'fish scale.' Such, however, is far from being the fact. Just underneath the scale, in a membranous layer of fat, is a tiny crystal called by its chemical name of 'guanin.' It is from this crystal of guanin that pearl essence is made, and not from the scale proper."—Editor.

Reed and Fiber Baby Buggies

INDUSTRIAL FINISHING magazine has been coming to my desk for some time and I've read every issue but have never found an article on finishing which we might use in our factory—namely the finishing of new

(Continued on page 6)

From the Editor's Desk

To Makers of Goods

QUALITY merchandise at low prices is the formula prescribed to manufacturers by the merchandise manager of one of the world's greatest retail stores. He declares that people are buying great quantities of goods not essential to their existence or comfort, but that an analysis of any product that sells particularly well reveals high quality, good design or style, and a real value at lower prices than formerly.

It is up to manufacturers to cater especially to the ultimate user of their products, finding out what features are desirable, then working out attractive designs and finally using materials, equipment and methods which will assure good quality at lower production costs; not an easy set-up, but not an impossible one either.

Small Factories

CERTAIN advantages of the small plant have been thrust into prominence recently because so many of the smaller concerns have been less adversely affected by depression than numerous larger concerns. A smaller percentage of "expense" for many forms of overhead, and greater ease in moving to another location, rearranging the equipment or adapting the organization to different work—these are a few of the advantages of the smaller concerns. Improved finishing materials and equipment, which are as adaptable to, and effective in, the smallest shops as the largest—these are important factors in the favorable situation of many small manufacturing concerns at this time.

Flowing-on; Wiping-off

IN THE letter department this month, a German's inquiry for equipment for finishing rulers reminds me of a ruler factory I visited some years back. Practically everything I saw was special equipment. The thin yellow shellac or varnish stain was flowed on automatically as the sticks (on edge) left the sanding machine which formed and smoothed them. Excess finish was removed by suitably placed wiping pads. Some of the moulding factories stain their mouldings this way, completing two operations in the space and time required for one. The overflow material was caught, strained and recirculated.

W. H. Rohr

Managing Editor

VARNISH SPECIALISTS
SINCE 1865

Why gamble on varnishes? From our great variety, we can supply you with the varnish precisely to fit your needs. Expert advice gladly given without obligation to you. Interesting prices.

THE CINCINNATI VARNISH CO.
Division of The Foy Paint Co., Inc.
CINCINNATI OHIO

Here's The Thinner to Use
For Dipping Spraying or Brushing

WORKS equally well with Paint, Varnish, or Enamel. Its high solvency prevents separating, jelling or thickening. Because of its adaptability, you need carry only one thinner in stock. Sunoco Spirits dries evenly and completely — leaves no greasy residue.

SUN OIL COMPANY
1608 Walnut St. Philadelphia, Pa.
Producers of Blue Sunoco Motor Fuel
Branches and Warehouses in 100 Principal Cities
SUNOCO

(Continued from page 4)

reed and fiber baby carriages, and the preparation and refinishing of used reed and fiber baby cabs. We are now using undercoat and enamel for this purpose. Before refinishing old carriages we remove the old finish by means of an "Oakite" solution which is thoroughly rinsed off and the cab dried for several days before putting on the undercoat.

The undercoat dries within 24 hours and then the enamel coat is put on. Then we let the carriage stand for two or three days before assembling and lining it.

We would like to know whether there is a cheaper way of doing this work which would be equally effective and produce the same results. If you have previously published an article of this kind, may I have a copy of that issue?—E.F.P.Co. (Baby Carriages).

Articles about finishing and refinishing furniture made of these materials appeared in June 1931, April 1928, Feb. 1926 and April 1925. More will follow.—EDITOR.

How to Lick Depression

The secret to our method of licking the so-called depression is to have sufficient sales representatives strategically located. . . .—Davis Engineering Corp.

Chemically Coloring Aluminum

We have recently reviewed a copy of your February issue of INDUSTRIAL FINISHING, and are particularly interested in the article on page 12 entitled "Alumilite Process" by Ralph E. Pettit; in fact, we are so interested we would appreciate your giving us Mr. Pettit's address so that we might carry on a little friendly discussion along the lines of his article.—C.H.F. Co. (Hardware).

January Furniture Show

A statement has appeared in the public press that the American Furniture Mart would not hold a market in January, 1933. This is not true.

At a meeting of the Board of Governors of the American Furniture Mart on July 5, the dates for the January market at the American Furniture Mart were set for Jan. 3 to 14, inclusive, and have never been changed.

At a meeting of the manufacturers exhibiting in the American Furniture Mart, a committee of the exhibitors

(Continued on page 46)

What changes we made in our finishing department

To Meet New Conditions

by EMANUEL F. WERNER

"Some of the salesmen who come to the plant are inclined to sing the blues too much and one almost dreads having them come around. I know that it is tough going from plant to plant with out scratching but it certainly does not help to come into the plant with an apology for so doing.

"Some of the men have been studying our situation and are offering better or different products for us to work on and if some of those who have been selling us in the past do not look out, they will find that the business has slipped away from them entirely."—The Author

WHAT are you doing in your finishing room? "What are you doing to keep abreast or ahead of the times? Are you just sitting back and hoping, or can you point to some constructive things that will help improve conditions if and when things become brighter?"

We have been hit hard. Who hasn't? Pet theories have been shot to pieces, production schedules scrapped, organization decreased, overhead too high, selling prices too low; in fact, everything that can be demoralizing and depressing. Naturally, our executives are not jubilant, not even overly optimistic, but they want us to carry on to the degree of keeping things going right until "Der Tag."

For some years, we have felt that our finishing room equipment, especially the spray booths, was not just the last word in perfection. Several times we wanted to make changes but we were either busy, or the cost was too high or any one of a number of excuses—none of them really bona fide, but still they delayed the change.

With the falling off of business came a reduction in inventory, and a number of bins and storage racks were eliminated entirely. Mer-

chandise was concentrated still further, and enough space was saved to provide for a new finishing room that would permit straight line production throughout the entire plant with only one break. Business fell off, and it was decided that now was the time to make the change.

Estimates were received on the new equipment, but the plans fell through on account of price. It seemed that all the well-laid plans would go for naught. However, a break came in the form of bad luck for some one else.

A fairly large manufacturing plant was put up for auction and included in the equipment was a splendid finishing room with spray booths, tanks, compressors, guns and a lot of other material less than a year old, and therefore in first class condition. Permission was received from the heads of our company to bid for the equipment up to a certain limit and, as the bids were few in number, we were successful in getting what we wanted.

Laying out the new finishing room and installing the new equipment represented only part of the improvements and savings made. Moving always brings to light parts of equipment, partly filled containers of material, odds and ends galore, that have been saved for a long time. We all do that, and the proof of it all is the stuff you find in your home when it comes time to move.

We thought that all the odd lots of enamels, colored shellacs, and stains had been used up long ago, as we have been making a drive along these lines, but still plenty of the stuff showed up. They have been put to one side right out in plain view where one almost has to stumble over them, but they are going to stay there until they are all used up. Every one in the finishing room is so disgusted with having this material right out under their nose all day long that they are making certain every job gets it that can use it.

Materials; Tests; Prices; Demands

We have resumed making tests on materials being offered by the various companies that call on us; and oh, the prices. The same old story again—only worse. We have not reached the stage where we are considering 65-cent thinner and 95-cent lacquer, but our head starts swimming every time one of those lacquer salesmen starts working on us with "cotton content, durability, scratch test, alcohol resistant, blush proof" and what have you.

We have, however, eliminated the higher priced materials entirely. The very high priced job requiring a perfectly rubbed finish has disappeared almost entirely. Even those jobs that we call "good" have decreased considerably. The fairly good jobs that require a flat lacquer to give a rubbed effect are still represented in fairly large numbers, but the cheaper jobs predominate, and they are our problem.

It does not pay to carry two different kinds of flat lacquer, clear lacquer, sealers and thinners when a medium priced job is likely to be followed by a cheap one, and that by a "good" one. We would get mixed up and use the better material on the poor job and vice versa. Small jobs would require much changing or no changing at all, and, in general, the arrangement would not satisfy.

We now have one grade of material—not cheap, nor is it the best. We handle our jobs, as follows: The sanding in the assembly department is regulated by the kind of merchandise going through. The same thing applies

in the finishing room. A low priced job will get a stain coat, sealer and a flat, with a "lick and a promise" sanding between the coats. The better job is filled, matched, sanded between the several coats, and the number of coats is determined by the price received for the merchandise.

The proof of the whole thing is that the finished products are acceptable to the customer and in appearance and wear they compare favorably with the product formerly turned out. The mix-up in the finishing room has disappeared, and the amount of material carried on hand is much less.

Wages; Competition

We have not cut the wages of the lower priced help at all. The higher priced men have received some cut, but their wages are still higher than the average in this district. All of the employes have been working fewer hours. They know that our company is doing the best it can, and as a result, the spirit is higher than it ever was, and the morale is especially good.

It is nothing common to see the men rushing out a job in order to hold the cost down, and then having to go home because there is no other job ready for them to work on. And the best part of this arrangement is that it has been done voluntarily by the workmen themselves, not only in this department, but in every department.

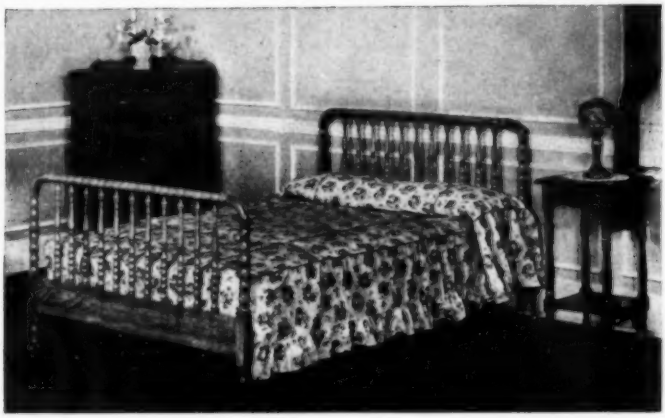
We are trying out new kinds of finishes and various combination of finishes that we never had time to bother with before. We have found that it is possible to take a small job and still make money on it. In that connection, several incidents have arisen in the past that were amusing.

We could not get used to the low prices that were quoted by some of our competitors and others. Try as we would, we could not get down to the figures quoted and still make a fair profit. It was all right when we had a quantity to run, but the small job had us stumped. We arrived at the solution in a very simple manner, and just the other day an editorial in one of the leading trade journals stressed the very same point. It was based on an address made by Mr. James D. Mooney, President of the General Motors Export Corporation. The message was called "Straight Thinking."

We are practicing "Straight Thinking." We are planning ahead, keeping our feet on the ground and making the best of conditions now because when the better times do come—and they will come—the plant that has been kept up to date, in repair and alive to the problems of the day is the one that is going to come out of the red the soonest. It is the survival of the fittest today as well as any other day, and one must either go ahead or sink. Take your choice. We are going to swim, and when we tire of swimming, we will tread water for awhile until we get our breath, and then we are going ahead.

Change Colors Occasionally

The individual when buying a new suit of clothes, or a new necktie, seldom chooses to duplicate the exact color and pattern of his previous purchase. Instead, some different creation is sought. The veracity of this psychology appears to be motivating factory production color releases at this time, to judge from the wide range of distinctive colors and color arrangements automobile show windows are displaying.—Automobile Color Index.



New Furniture Designs and Finishes

Inspected at Chicago's Summer Furniture Show

by R. G. MEAD

AT THE show this year the visitor approaches a space noted for the extensiveness of its exhibits and originality of production,—and he rubs his eyes. Where is the gimcrack fussiness of a few years back? Where the near Italian Renaissance, the almost Jacobean, the travesties on Spanish, Georgian and Gothic originals, the sickly "French Walnut," and worst of all, the horrible burlesque of Moderne?

In their place we find for one a simple but authentic Elizabethan oak dining room suite, the top of the table routed to suggest a pleasing two-tone effect, the legs correctly and not excessively bulbous, the cabinet fronts flat and carved in fine old medallion effects. The color is a dark brown, the tone black rather than reddish or yellowish, every surface wood grain showing, no shading, but a distinct antique

The illustration on this page shows a Jenny Lind bed by the American Woodcraft Co., Evansville, Ind. It is made of birch wood, finished in light maple water stain and flat lacquer.

effect with all carvings and routings finished darker in the recesses than elsewhere.

Note that Jenny Lind bedroom suite in maple! A similar suite appears in several exhibition spaces. The tone is honey; no shading; the effect is warm, friendly and clean cut, without a gleaming luster, and free from unnecessary ornamental detail or bizarre coloring.

The Trend in Decoration

Some few examples of the prosperity debauch can be seen. There are four-poster beds distorted by excessive carving and ornamentation, resembling nothing ever before seen in this design; there are dressers and buffets with practically every square inch loaded with half rounds, buttons or "rare woods." But these are now the exception rather than the rule; the trend is strongly toward pure early American and pure classical style reproductions. Modernistic retains its hold in certain lines, but French Provincial, for a time so promising, has gone the way of Chinese red china cabinets, half round or barrel dressers, and "doughnut" shading.

Fancy woods commonly seen include aspen, curly and burl maple, Oriental walnut, Hungarian ash, Carpathian elm, crotch mahogany, satinwood, oak burl, and crotch, stripe, sliced, butt and rotary-cut walnut. Decoration features two-tone effects; virtually no shading and no painted or transfer designs, except in breakfast room suites. This absence of decorative emphasis must of necessity follow where the trend toward the simpler styles is so marked.

Must it be conceded that quality and good taste are children rather of adversity than of prosperity? To the observer of finish and design at the 1932 Mid-Summer Furniture Show, the answer cannot be other than an emphatic affirmative.

Bedroom Furniture

Walnut still leads in the bedroom lines, but the vogue for Colonial is crowding it with Jenny Lind suites in maple and Queen Anne and Duncan Phyffe in mahogany. Shading is but seldom seen, and in walnut veneers sunburst and quartered diamond stripe effects are the most popular.

Colors are conservative; for walnut a nut brown on the warm side but not reddish or yellowish. Maple runs from a yellowish brown to a rather deep brown, but the orange and red tones formerly seen are no longer popular. Mahogany continues to favor a brownish red, rather than a reddish brown, but there is a noticeable effort to achieve the so-called "Old World" tone which may be described as the effect given by natural, unstained mahogany which has aged to a mellow sherry wine tone.

Decoration features grille overlays on walnut, finished light to contrast with darker backgrounds, two-tone effects divided by routed vein lines which are left natural, highlighting on carvings, but little or no shading on flat surfaces.

Metal beds show pencil stripe walnut veneer effects with marquetry decoration; also satinwood and burl walnut with black bands

for two-tone with gold striping in between.

A few outstanding suites included a handsome Jenny Lind or spool design, painted pale green and banded and striped with gold, a Directoire design executed in satinwood, aspen and cherry burl with marquetry decoration, and several handsome Queen Anne designs with exceptionally beautiful crotch walnut and crotch mahogany veneers, the latter finished in the Old World tone. Virtually no oak is shown in the bedroom lines.

Dining Room

William & Mary in walnut, Duncan Phyffe and Queen Anne in mahogany, and Jacobean or Elizabethan in oak divide honors in the dining room class. Walnut colors favor the nut brown with straight grain or Oriental tops, and crotch for cabinet fronts, all free from shading and with a semi-polished luster.

Mahogany appears in reddish brown with highly polished varnish or lacquer tops and fronts. Oak runs to worn, highlighted edges, dark brown colors and dead flat finishes in two-tone effects—and like mahogany it is not mingled with other woods as is walnut.

In the dinette and breakfast room class originality and excellent taste are outstanding where once it led in jazz age innovation. To cite a few examples: A peasant suite in brown birch, sawhorse table and medieval chairs, all pegged and flat lacquered in a matte finish; a modernistic number in satin black with aluminum painted aprons and legs; a combination of yellow toned maple and black; another of walnut and green paint with gold stripes, both very effective. Breakfast room finishes have standardized to natural or green filled oak decorated with running stencil designs in harmonizing colors and black, shaded together; also rotary-cut gum finished in walnut and birch in maple. All frosted, crackled and even painted effects have disappeared.

Living Room and Novelty

The vogue for overstuffed with little or no carving continues unabated in the upholstered lines, with oak and walnut frames rather elaborately carved and highlighted, and mahogany finished brown and highly polished.

Period designs are dominant among the novelty pieces and mahogany in the Old World tone is particularly popular. The only color noticeable was in such designs as a kidney-shaped desk in Louis XV style of satinwood with decorations in gold on a delicate green painted background.

Magazine racks, humidors, end tables and the like are far more apt to be mahogany than oak, or maple than walnut—all in plain tones, without shading, vein lining or decalcomanias.

Cedar chests, as customary, follow the bedroom designs and finishes, and consequently feature oak and walnut, with surprisingly little maple. A few novelties comprise drawers added to the chest, lamps, mirrors and clocks installed on backs, and tapestry and grille fronts.

Porch and Kitchen Furniture

Porch furniture continues to grow more conservative, getting away from modernistic treatment, at the same time showing far less use of fiber than ever before. Tubular metal designs, and polished aluminum strapping are effectively combined with green

and black, green and orange, and vermilion on painted steel strap seats. Imitation bamboo of stick reed in yellow shaded in brown is popular.

Kitchen cabinets seem to belong to breakfast sets or vice versa. In any case, they are commonly shown together as harmonizing units in oak, stained or painted green and trimmed with cream, lavender or black. White seems to be coming back, medium in gloss and stenciled in green or blue or black. Several effective frosted and marbleized finishes were noted, one in particular of strong modernistic inspiration.

Treating Rush or Fiber Chair Bottoms

Careful inspection of the condition of antique chairs shows that it is necessary to treat rush bottoms in some way for their protection. Suppose we take two chairs from 50 to 75 years old, with their original bottoms still in service. One chair has come through all this time with nothing on, but upon inspection the material is found to be very rotten and stringy like, ready to fall apart. The other chair has been protected with several coats of paint and it is good for another half century. Turn this chair over and look at the underside; it is a little decayed but not bad. Most of the old chairs have been painted, and this has taught us that the chair bottoms of today should be treated to preserve them and prolong their life.

The making and finishing of old fashion rush on flag bottoms for chairs is rapidly becoming a lost art. The fiber mesh or twisted paper is taking its place, as it is much easier and quicker to apply. But this material also must be treated to make a good looking and tight bottom; it is put in dry and it is hard to draw tight, whereas the old flag material was put in damp and could be made tighter.

Fiber rush can be made very tight after it is put in by applying a filler made of white shellac and a suitable filler material—always use white shellac as orange shellac makes the seat too dark. Sometimes it is necessary to use two coats of filler. This will appear white when dry but after the application of varnish, or whatever the final coating is, the filler will not show, and it makes a job that cannot be picked out from the old flag bottom if the two-toned rush is used.

When spraying or coating these bottoms, coat the undersides as well for protection, and some of the bottoms you make today will be doing duty 50 years from now. Some customers don't like the idea of having paint on their chair bottoms, but the bottoms can be painted a pale yellow and glazed with pure drop black or a mixture of burnt umber, and when partly dry dusted over with rottenstone and well rubbed off, you will have an effect that goes well either with a real antique or a reproduction. —J. K. Cooper.

New Precious-Metal Coating

The American Consul General at Frankfort reports that a German scientist has invented an invisible colorless protective coating for silver and other metals, for the preservation of their surface without subsequent painting or lacquering.

The new coating is made from fossil resins, such as amber or Congo copal, dissolved cold by a patented process. It is said to preserve the original polish and color of the metal, and also to prevent chemical changes. It offers a fair measure of protection against abrasion and wear.—*Drugs, Oils & Paints.*

Steamship Interior Decoration

The new steamship *Champlain*, rated the largest and fastest cabin ship ever constructed, recently made her first voyage, from France to New York. The interior finishing of this huge steamer has several unique features. In general appearance it is distinctly modern. The promenade deck—which is glass enclosed for its entire length of 350 feet—has a deck flooring of a newly developed slip-proof and sound-proof type. It is a rubber composition stamped into little squares, colored in red, green and white stripes.

The grand staircase is of sycamore wood, with palissander columns and sculptured wood panels representing Champlain's ship, his map of the new world and other maritime subjects.

The library and writing room has walls of Chinese lacquered panels, carved and painted to represent old Quebec scenes.

In the grand salon, for the first time in ship decoration, genuine parchment, stretched and varnished to retain its natural color, has been used for the walls. The illumination is from unseen projectors in the top of great pillars of gold-colored steel, creating the effect of natural sunshine in any kind of weather.

The smoking room is decorated with sculptored giant figures of kings, queens, jacks, hearts, diamonds, clubs and spades painted in brilliant black and red. Panels in this room are of sheepskin.—B. CALDWELL.

The smooth cylindrical pillars have hidden illumination projectors in their tops and electric heating radiators in their bases.

Selection and use of Wood Putty Fillers

. . . . for conditioning new and repairing old wood surfaces preparatory to finishing or refinishing operations.

by C. DAN YOUNGS

MANY WOODWORKING factories are obliged to use lumber which contains worm holes, checks, torn grain, cracks and small knot holes, for manufacturing products to be finished. These defective places must be filled and leveled smooth with the surrounding surface before finish or paint coats are applied. Then there are nail holes and perhaps other holes, cracks or blemishes to be filled in order to give to the finishing department a smooth, even unbroken surface to work upon. In many cases such filling is left to the finisher, but many times also, it is wise to fill in such defects before it leaves the cabinet department.

Several different kinds of wood putty or plastic filler are on the market, but there is no satisfaction in using some of them because of the likelihood of their pulling loose when dry, shrinking in at the edges, and sinking in from the top. There is also a strong probability of some of them cracking a few months after the finished article is sold and in use.

A water-soluble filler, or one which is to be reduced with water is superior in many ways to one which is to be reduced with linseed oil or distillate, for several reasons:

First, the drying time is materially lessened.

Second, unused portions can be kept in better shape in the opened package.

Third, there is no likelihood of the reducer staining the adjacent pores of the wood with its attendant discoloration or darkening, as is the case with oil or petroleum spirits.

In removing dry, water-soluble filler from the package, it is better to scrape it off evenly from the top than to gouge it out from

the package in the center; this leaves a level, minimum-area surface presented to the air, which has a tendency to cause the natural hardening it is subject to.

Openings to which filler is to be applied should be thoroughly cleaned out to rid them of fine sawdust, powdered sander dust, loose fibers or any other foreign substance. Fillers should be pressed tightly to the bottom of the opening, and care should be exercised to see that the filler is not too moist, else, as the water evaporates, there will be sections of the hole or opening which are not fully filled.

A small flexible knife or spatula is a good tool for this work, but it must be kept clean, as old filler hardened upon it will make it difficult to handle. The filler will also work much better if the knife used is frequently dipped into water while in use.

Deep depressions should not be filled entirely at one time, as there is a possibility that the bottom will not harden equally with the top. Surface drying is apt to be a result of this practice. Holes should be filled nearly even with the top of the surface, permitted to thoroughly dry, sanded if possible, and then filled to the surface level. This will slow up the operation, but will give a more perfect job and will lessen the possibility of comebacks and complaints after the article is sold.

Water-soluble fillers are playing a very important part in the present day trend for speed in the finishing room. They have a definite and specific part in production schedules which embrace quick-drying stains, fillers, and either the 2-hour to 4-hour varnishes or lacquer finishes.

Summing up, water-soluble fillers have the following merits:

1—They dry quickly at normal temperatures; (two to four hours at 75° F.)

2—When properly applied and dried, they do not shrink.

3—First coats or following coats can be applied within a few hours after the filler is used.

4—The reducer (water) is much cheaper than oil or petroleum spirits, safer, and much easier to handle.

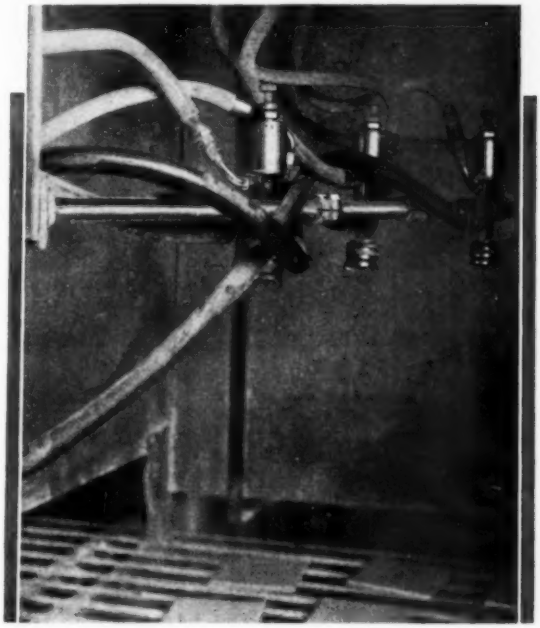
Water-soluble wood fillers have made a very definite place for themselves in the industrial finishing industry within the past few years.

Fan Shutters Automatic

Automaticity is a thing which is striven for in all industry. When a thing operates automatically as the need arises, it saves both labor and supervisory effort, and therefore money. Consider, as an instance, automatic shutters which will operate in conjunction with a part-time ventilating fan. Some concerns are using them with the best of success. When the fan is started in order to carry away vapors, the shutters open automatically from the air pressure against them. When the fan stops, the shutters close and interlock, keeping out rain, snow, and cold air, not to mention insects and dust.—J. H. Ellers.

Free Book About Brushes

The names, descriptions, specifications, illustrations and merits of various types of high grade brushes for spreading paints and finishing materials are given in The Sherwin-Williams Co.'s 24-page booklet which also includes directions for the selection, care and use of good brushes. You can get a copy free by mentioning this magazine when writing the Painter-Division of The Sherwin-Williams Co., 101 Prospect Ave., Cleveland, Ohio.



Automatic Spray Guns

by WM. J. MISKELLA

Consulting Engineer

PROPER operation of the automatic spray gun is dependent upon three factors: consistency of material, adjustment of gun, and care of equipment. Regulation of the various adjustments of the spray gun are necessary to obtain the most efficient results. These adjustments vary for different materials and types of work. A short practice period will make the operator proficient in making the most efficient adjustments of the spray gun controls.

A uniform application of material should result over the entire width of the spray. An excess of

mist or fumes about the main body of the spray indicates an excess of atomizing air pressure. Blowing out the center of the spray, resulting in an excess of material at both ends of the spray and a lack of material in the center, is also an indication of too much atomizing air pressure.

Air Pressure

A surface spotted or dotted with material indicates an insufficient atomizing air pressure; while runs or sags are indications of too much material. The atomizing air pressure may vary over a range of from 10 to 80-lbs. although an air pressure of between 35 and 60-lbs. is correct for most work. This pressure, as previously explained, must be regulated according to the material used and nature of the work. This regulation is obtained either by an air regulator or by the air adjusting valve located in the atomizing air passage of the gun body.

No adjustment of the air pressure operating the mechanism which controls the opening and closing of the fluid needle is necessary. However, a constant air pressure of 50-lbs. is required to operate this mechanism properly.

Fluid Flow

The amount of fluid flow is increased or decreased, as desired, by the fluid needle adjusting screw at the extreme rear of the spray gun. The fluid flow is also affected by the pressure on the material in the material container. Pressure in the container should be such that it causes a slow flow of material from the gun nozzle when the fluid needle is open and the atomization pressure turned off. The size or width of the spray is regulated by the setting of the spreader adjustment valve.

Clean Equipment

Thorough cleaning of the spray gun and material hose lines after use is absolutely essential for proper operation and best finishing results.

To clean the equipment, first remove all excess material from the gun, the hose and the tank. Place an adequate amount of solvent suitable for the material used in the paint tank and spray in the usual manner. After spraying the solvent, blow out the gun and fluid lines with compressed air and wipe dry.

Should the spreader jet holes in the air cap become clogged with dirt or paint, immerse the air cap in solvent and clean holes with a pipe cleaner or broom bristle. Never use a hard or metal instrument, as it will injure the cap and cause an unbalanced spray.

Keep the air cap and its retaining nut tight against the spray head during operation. A loose air cap will cause a material to drip at the gun nozzle and divert material into the spray head.

A fluid drip at the gun nozzle can also be caused by the improper seating of the fluid needle, which may be due to a collection of material in the fluid tip or the gripping of the needle by the packing in the packing nut.

Lubrication

Oil all moving parts daily. The graphite treated packing in the packing nut may become dry or hardened after a period of use. To lubricate this packing unscrew the packing nut as soon as possible and place a few drops of oil in the recess of the gun body.

An air leak from the holes in the cylinder cover at the rear of

the spray gun indicates that the leather piston has dried out. A few drops of oil on the leather will remedy this condition.

The atomizing air pressure at the gun nozzle can be increased or decreased by turning the thumb nut of the air adjusting valve either to the right or left. When the index line on the thumb nut coincides with the index line on the gun body, the maximum atomizing air pressure is obtained.

Adjustments

The amount of fluid flow at the spray gun nozzle is increased by turning the knurled, fluid-needle adjusting screw outward, and decreased by turning it inward. The knurled, fluid-needle adjusting screw lock nut holds the adjusting screw at any desired setting.

The knurled, fluid-needle packing nut, located in the center of the spray gun body, should be tight, but not so tight as to grip the fluid needle. It contains a graphite treated packing which acts as a bearing for the fluid needle, and also prevents leakage of material at this point.

The sleeve and cylinder behind the packing nut protect the fluid needle from dust and dirt. The spray head is adjustable and the spreading adjustment valve controls the air passing to the supplemental spreader jets in the air cap.

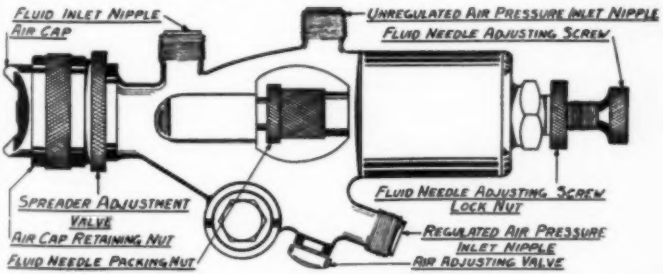
The rear face of the spreader adjustment valve is marked with graduations. Beyond the neutral position a flat spray results which is either horizontal or vertical, depending upon the position of the air caps spreader jets.

The size of the spray increases in width until the last graduation is reached. For average conditions the setting of the spreader adjustment valve may be easily regulated.

It is seldom necessary to remove the spray head parts, providing the gun has been properly cleaned after use. However, if necessary, remove the air-cap retaining nut and air cap, and unscrew fluid tip by placing wrench over hexagon portion. After this you will be able to pull out the whole adjustment assembly. When replacing parts, draw up the fluid tip tightly.

Setting the Spray Guns

The automatic spray gun may be installed in any position or at any angle suitable to existing conditions. It is supplied with a swivel clamp for fastening the



Details of automatic spray gun such as appears at the beginning of this article.

gun rigidly in position. The clamp, which accommodates a ¾-in. diameter rod, is so designed that it may be placed on either side of the spray gun body.

The spray gun should be positioned anywhere from 6 to 10-in. from what is going to be sprayed, and in the most advantageous position to properly coat the article.

Air and Material Lines

Hand or mechanically-operated valves are furnished for controlling the air passing to each gun, thereby permitting the starting or stopping of the spray at any required intervals.

Two separate air lines to the guns are necessary. A regulated or low pressure air line must be supplied for atomizing the material, and an unregulated or high pressure air line for controlling the fluid needle mechanism.

Connect the fluid hose to the fluid inlet nipple of the gun. Connect the regulated or low-pressure air hose to the regulated air pressure inlet nipple. This is the atomizing pressure.

Connect the unregulated or high pressure air hose to the unregulated air pressure inlet nipple. This controls the fluid needle mechanism. It is usually most convenient to install the spray gun with the fluid nipple and unregulated air nipple on the top side of the spray gun.

Coloring With Hot Sand

Interesting methods used in partly or entirely finishing products involve the use of heated sand. Sand is used in bluing polished steel parts; in such instances the steel parts are simply packed in hot sand for a period of time. Another interesting use for hot sand in finishing work is the variable shading of marquetry parts, or fine inlaid wood veneer panels. Much richness is added to these inlays in this way.

The sand is kept hot in pans, and the small pieces of veneer inlay are placed in the sand edgewise, but only partly beneath the surface. In this way, the buried edge becomes the darker, and the shading is beautifully and evenly blended. The pieces are watched until they take on the required shade; then they are promptly removed to prevent scorching. In this way detail is worked into a marquetry panel much as we add detail to a drawing by proper shading. The finish coating applied over these colored panels is a transparent one.

Probably there are many metal products, as well, which could be finished by hot sand shading, as well as by the straight bluing process.—J. E. Hyler.

The conclusion to be drawn from recent information on the psychotherapeutic qualities of color are that blues and greens are powerful sedatives, while red acts as a tonic. Yellow is for happy and contented people—a symbol of sunshine to those who enjoy sunny moods.

Lacquer Sales for the first quarter amounted to 4,753,174 gallons, valued at $7,172,404. Finished lacquer: 2,341,472 gallons, $4,820,678; lacquer thinners: 2,159,857 gallons, $2,010,186; dopes: 251,845 gallons, $341,540.

Conway Joins Cook Paint & Varnish Company

Harry F. Conway, who for the past 14 years has been with Pittsburgh Plate Glass dealer-and-industrial sales, is now associated with the Cook Paint & Varnish Co. of Kansas City, Mo., industrial sales department.

For the smart note in . . .

SMART METAL FURNITURE

ZAPON S-53

Up to the mode of the moment, Zapon offers a new fast-drying and water-resisting lacquer that was specifically created by THE ZAPON LABORATORY to give permanent protection and beauty to metal garden furniture.

S-53 is very economical. Most effectively used when thinned thirty to forty per cent. Sprays evenly and sets in a half hour. Hardens over-night to a tough, flexible finish. Only one coat is necessary.

The high gloss resists dust particles and moisture. Dries in a few moments after a storm or coating of dew. Sold in nearly all standard colors and tints.

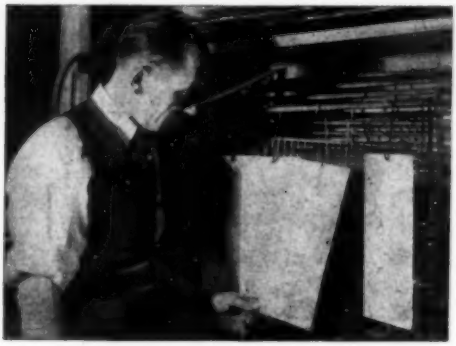
If you require technical information on S-53, or any other lacquer, and its application, consult with The Zapon Laboratory by mail or wire. Our experience may help you solve a difficult lacquer problem.

"The Standard of Quality Since 1884"

THE ZAPON COMPANY

A Subsidiary of Atlas Powder Company

Stamford ZAPON Connecticut



Examining lacquered panels which have been subjected to a salt spray test for several days.

Finishing KELVINATOR Refrigerator Cabinets*

by CHARLES C. THOMAS
Cabinet Engineer of Kelvinator Corporation

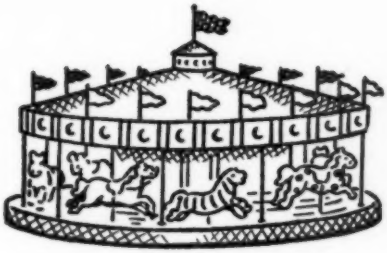
IN THE LABORATORY, of course, it is possible to thoroughly clean the bare metal of a small panel so that the finish, when applied, will show uniform results from one panel to the next. In actual production, however, the ever present human element leaves some doubt as to whether or not all of the metal on a cabinet is at all times perfectly clean.

Clean Bare Metal

If finish is applied over bare metal, the finishing should be done immediately the metal is clean. If allowed to stand for any time in the air, minute oxidation takes place which may impair the finish. Furthermore, the placing of the human hand on a clean sheet of metal will immediately start a point of oxidation, causing the finish to flake off later at this point. Consequently, the Kelvinator Corporation has long been using the "Parker" method of cleaning and preparing the metal for finish, known at present as the "bonderize surface."

During this process, all grease, foreign material and oxidation are removed, and a surface is obtained which is not materially damaged by the human element. With this process we know that the surface is clean, and long experience has showed us that the adhesion of a white finishing material over this

*Part II of article which began in July issue, pages 11, 12, 13 and 14.



Around the Merry-Go-Round

WE WANT low prices. You want low prices. The dealer tells you he must have low prices. And his customers won't buy unless they see low prices.

In all this Low Price merry-go-round we are apt to forget there is such a word as quality. The factor that sometimes makes a higher priced material cost less in the end.

Du-Pros Strictly Pure Shellac has almost twice the solids content of other types of sealers. In plain words, this means that Du-Pros can be cut in half and still have as much body as ordinary sealers. No wonder it is the most popular sealer the furniture industry has ever known.

JAMES B. DAY & CO., CHICAGO

Du-Pros Pure Shellac

Finest Quality for 30 Years

surface is good for a long period of time. We may go further to say that both our laboratory and field tests indicate that the life of the ultimate finish is improved by the use of a surface prepared by "bonderize." The extra expense involved in preparing the surface of the metal by this method, in our opinion, is justified as insurance against troubles in the field which, by the way, are at a satisfactory minimum in the Kelvinator picture.

Last, but by no means least in importance, is the fourth requisite —the plant specification set-up procedure for controlling the uniformity of the product. Mention was made that most materials have a certain amount of flexibility to make allowance for variations that are bound to occur in a plant. A plant, not controlled by a definite set-up, may be operating either within or without the flexibility limit of the material being used without visual evidence that the material is being applied improperly, and this uncertainty is very often at the root of troubles which occur in the field later.

Checking Incoming Materials

In the Kelvinator plant, incoming goods are checked for every physical specification requirement, and the material is held within a very narrow margin of uniformity. Laboratory check methods are used to inspect the materials as they arrive at the plant, not only by the paint-mixing room personnel, but a double check is given by the inspection division.

A very definite specification is set up in the paint-mixing room covering both procedure and material, and daily records coming from the mixing room must account for every gallon of material passing through this department and show exactly where it is distributed throughout the plant. Before any material can be distributed from the paint-mixing room an inspector rechecks the material to see if it is up to specification governing the reduced materials, and a record is taken.

A small paint laboratory is maintained under the head of the inspection division for the sole purpose of making periodic test checks covering every spray point in the plant. At intervals during the day production procedure is interrupted long enough to take check samples of the material being sprayed from the spray gun; this material is taken to the laboratory and checked to make certain that it has not been tampered with since leaving the paint-mixing room. In this way, any deviation from the set-up procedure of handling the material is caught within a very short period of time and corrected immediately.

Sample Panels Finished

For the purpose of keeping a permanent record of the finish being applied, small metal panels are finished up and sent to Detroit to the main laboratory for record. These test panels are finished with a production finish on the line and sent through in the usual way. At Detroit these panels are filed and periodically checks are made to make sure that the finish is the same as was originally released.

A definite check set-up procedure is carried out at the Detroit laboratory to check the original qualities of the material such as adhesion, resistance to fading, resistance to moisture, etc., and a card record is kept as of the date of the prepared panel, so that at any time reference may be made to the exact condition of the material applied.

"No, you can't sell me on price alone . . . ."

"We've been all through this thing, and we've learned our lesson! We don't want to pay any more than we have to, but it's got to be the right kind of lacquer first, and that means Butanol. What is your lacquer made of?"

Lacquer users abreast of the day insist upon knowing what's in the lacquer they buy. They know that any desired quality of lacquer can be produced for less, when formulated with Butanol and Butyl Acetate.

COMMERCIAL SOLVENTS CORPORATION

230 PARK AVENUE.....NEW YORK, N. Y.
PLANTS.....Terre Haute, Ind., and Peoria, Ill.
Immediate service from strategically located warehouses

BUTANOL SPELLS SAFETY

Code Identifies Cabinet

On the base of each cabinet, a code number is stamped to identify not only the finish that is on the cabinet but the date the finish was applied, so that in case this number is sent in from the field we have the exact identity of the finish as well as the date of production.

Due to the fact that the paint industry must necessarily employ chemists to formulate and compile its product, and further due to the fact that there are literally hundreds of thousands of finish formulations, naturally the purchaser of the finish can know but little about the subject as a whole. The manufacturer of a product using finishes is often entirely at the mercy of dozens of paint manufacturers and it is a surprising fact that a majority of the large paint users rely on the information given them by paint manufacturers rather than to take the trouble and spend the money to set up a laboratory and maintain a complete check system governing their operation.

A paint tester takes lacquer directly from the spray booth at regular intervals to make tests on the uniformity of the material.

White Finish Difficult

A good white finish is not only one of the most difficult colors to produce, but in general it is more difficult to apply, therefore it seems to us that for manufacturers applying white finishes, a thorough control system is a real necessity to secure and guarantee a uniform quality finish.

From the foregoing it will be apparent that Kelvinator goes "all the way" to see that the quality of its finishes is the best that fine materials and extreme care make possible—and Kelvinator maintains for this purpose the most elaborate set-up and working standards known to the cabinet industry. It is this which has gained for Kelvinator its reputation for a quality product and world-wide acceptance of that product.

Transfers Adhere to Cloth

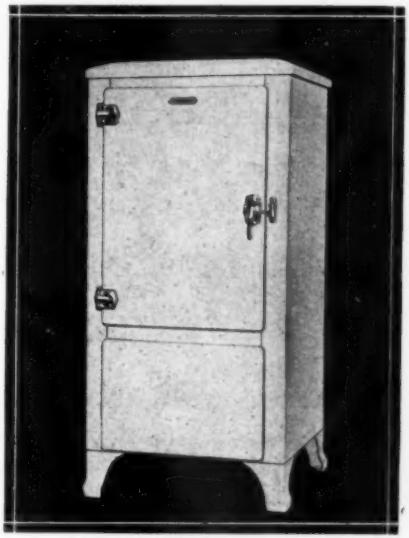
It is common practice to apply decalcomania transfers to wood and metal but rather unusual to use them in connection with fabrics. In fact, it is not generally known that the transfer people have available a so-called cloth-fix adhesive which is applied by means of a hot iron. This method of application makes it possible to decorate a cloth surface with special designs already available in great variety. In fact, it opens up a new line of thought where fabrics are involved and especially does the idea apply where the cloth is not subjected to severe use and movement.—N. A. L.

No. 9007 Lacquer Enamel

Meets

Kelvinator

Demands



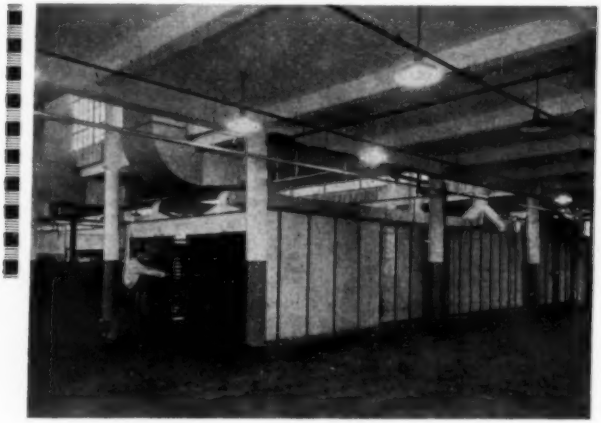
The glistening, porcelain-like finish on this Kelvinator refrigerator is produced with No. 9007 Refrigerator Lacquer Enamel.

THE use of No. 9007 Refrigerator Lacquer Enamel by Kelvinator—the world's largest and oldest manufacturers of refrigerators in the world—as well as on thirty-seven other standard makes, should be sufficient proof that this finish gives perfect performance in the field.

At this time of the year when production in refrigerator factories is slowed up or temporarily suspended pending the bringing out of new lines, manufacturers should investigate No. 9007 Refrigerator Lacquer Enamel, the "trouble free" finish that surpasses its competitors in beauty and durability.

Grand Rapids Varnish Corporation

GRAND RAPIDS, MICH.



Modernized Japanning

by HALE A. CLARK*

Japan finishes, articles japanned, baking temperatures, types of ovens; the operating principles, safety characteristics and production advantages of recirculating heating systems for bake finishing.

JAPANNING may be defined as the process of coating metal surfaces with a protective and adherent covering of a pigment ground in drying oils, which harden by the application of heat. A true baking japan consists essentially of a black pigment, such as carbon black, ground in a special type of baking varnish, which is composed of various gum resins and a drying oil, either linseed or chinawood oil. To this mixture is added a certain proportion of a thinner, such as naphtha or mineral spirits. The japan when used is further thinned to a consistency which is determined by the particular set of results desired.

A true japan must be baked at a temperature of 375° F. or higher in order to produce the hard, adherent surface, free from tackiness, with which we are familiar on our automobile fenders and other parts.

During the baking process the thinners are evaporated first, then the drying oil is oxidized, forming

* Dayton Power & Light Company.

NEW
"ECONOMY LINE"
of lacquers and sealers
by
BERRY BROTHERS

•

This splendid and timely new 800 series of lacquers and sealers has been developed by Berry Brothers for manufacturers who *must reduce costs*—but who don't want to throw quality overboard.

While the prices are low, the quality is comparable to lines much higher in price. Here, in brief, are the specifications:

814B LACQUER SEALER—*An extremely fine product, dries to sand in 30 minutes. Sands very easily. Builds on the surface. Holds out succeeding coats.*

824 & 824A DULL LACQUERS—*Can be applied directly to the wood, sand well, and can be used either with a sealer, as a one coat finish, or by applying two coats of Dull*—eliminating the need for two separate materials. (*824A has a higher solids content.*)

839 CLEAR GLOSS LACQUER—*A great bargain. Has a high solids content, sprays with a minimum of orange peel, stands out with good fullness—rubs and polishes extremely well.*

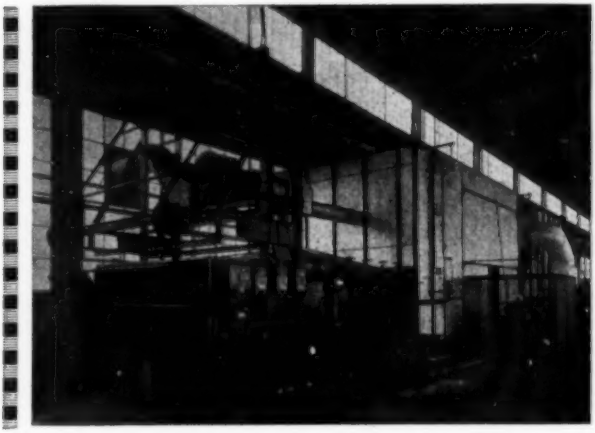
QUALITY AT LOW COST—These products meet a vital need—solve the most perplexing problems of the hour—by permitting you to maintain quality while materially reducing costs. Write today for details and prices.

BERRY BROTHERS

PAINTS - VARNISHES - ENAMELS - LACQUERS

DETROIT, MICHIGAN WALKERVILLE, ONTARIO

with the gum resins a tough film which binds the pigment firmly to the metal surface. This coating is smooth and glossy, tough and elastic, and forms one of the most durable metal coverings known. It is perfectly stable and does not change after once being baked. By using special kinds of japan and operating the oven in which heat may be applied to japanned parts in order to produce the hard, glossy surface so much desired. The usual procedure, however, is to dip the article, either by hand or conveyor, into a tank of japan, allow it to drain for a short time, then place it in an oven for baking. Parts receiving hard usage or on which an



Continuous vertical multiple-pass oven for baking finish on brake drums and other brake parts

in a certain way, various special finishes, such as crackle or wrinkle japan and crystal japan, may be obtained.

Among the many metal parts using baked japan as a coating are automobile fenders, running boards, splash aprons, and tire covers, stove parts, typewriters, sewing machines, toys, and many others. For durability and low cost a japanned finish is unexcelled; the only serious disadvantage lies in the fact that the sole color available in a true japan is black, which, in this present era of color, limits its use.

There are a number of ways exceptionally fine finish is desired usually have two or three coats of japan, each being baked separately.

Types of Ovens

Ovens for the baking of japan are of two general types—intermittent and continuous.

Intermittent or box ovens are made in several types. In one, the work is placed on trucks or racks and wheeled into the oven, which is usually rectangular in shape. In another type the work is hung on an overhead conveyor and rolled into the oven. These ovens may be built with any num-

for a house . . .

or a handle . . . a

REZYL-*type*

finish is best!

No matter how small or how large, how fragile or how sturdy the object to be finished, REZYLS will help you to do a job of which you can be proud.

These uniform, complete resins are made by the American Cyanamid & Chemical Corporation and sold to manufacturers of fine finishing products. Particular buyers ask for REZYL types again and again, because they have greater durability, adhesion, gloss, hardness and elasticity.

Manufacturers know the REZYLS . . . *many use them exclusively. Ask yours to show you his* REZYL-*type finishes.*

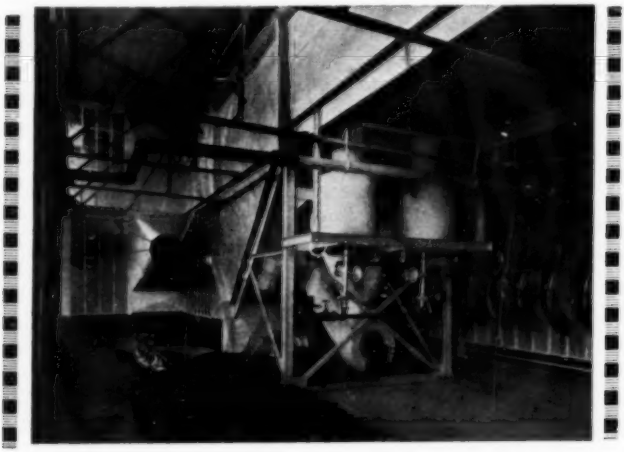
American Cyanamid & Chemical Corporation
535 Fifth Avenue, New York

ber of compartments. A special kind of intermittent oven, known as the truck-train type, has a floor conveyor which carries a truck into the oven through a self-opening and closing door every three minutes. At the same time a truck of baked parts is carried out the discharge end, thus making this baking cycle almost a continuous process.

In continuous ovens there is a much greater variety of construction. There are A type ovens, vertical multiple-pass, straight-away horizontal, bottom-entry horizontal, and hairpin type horizontal ovens, besides a multitude of other special constructions. These ovens are usually equipped with an overhead conveyor, with special hangers for supporting the work. The A type or vertical type ovens are usually the most efficient from the standpoint of heat economy, but may not necessarily be the best for fitting into the available plant space or for the particular kind of work being done.

The choice of whether box-type or continuous ovens should be installed depends upon a number of factors, such as the amount and kind of work to be handled, the plant space available, the cost of the ovens, installation costs, and numerous other items. Each case must be studied by itself, as there is no one kind of oven best suited for all conditions.

Where the best quality of finish is desired, it is usual practice to enclose the enameling department in a separate room, supplied with washed and filtered air. This room is kept under a slight pressure to prevent infiltration of dust-laden air.



Recirculating heaters on an oven for japanning automobile fenders and tire covers

Recirculating Ovens

A recirculating oven-heating system consists of the oven itself, an external heater with fan and

They sell SAFETY—so they play SAFE with finishes!

YOU need carry just *one* key—for your house, garage, car, office and club locker! This simple but revolutionary idea is the heart of the Best Universal Locking System of Seattle, Wash.

Each lock has a removable cylinder, making it possible for you to change your own combination. Thus you can coordinate all your locks, and change combinations quickly if you lose the key. Thus added safety and added convenience go hand in hand.

The *finish* of these Best locks was chosen shrewdly. It must protect completely against severe weather. It must harmonize with decorative schemes. It must be economical.

That finish is Egyptian Lacquer.

Whatever *your* product's finishing problem, Egyptian Lacquers can help *you*. An Egyptian finish makes things both better and more attractive. It often results in real savings. It's a step forward to call in the Egyptian representative. No obligation.

THE EGYPTIAN LACQUER MANUFACTURING CO.
INCORPORATED
90 West Street, New York

Completely equipped branches in charge of practical men are maintained in the following cities:

ATLANTA	CINCINNATI	KANSAS CITY	SEATTLE
BOSTON	CLEVELAND	LOS ANGELES	SPOKANE
BUFFALO	DALLAS	PHILADELPHIA	ST. LOUIS
CHICAGO	DETROIT	SAN FRANCISCO	

In New York, call the Advertising Dept. at the Home Office

Kindly mention INDUSTRIAL FINISHING when writing advertisers

controls, a ventilating stack and fan, and properly arranged duct-work. The heater may be placed almost anywhere reasonably close to the oven—beneath the oven, on top of it, on either side, or even on a different floor. Two ducts are provided between the oven and the heater, one for the delivery of hot air to the oven, the other for the return of most of this air to the heater for recirculation.

The amount of heated air returned to the heater may run as high as 90% and is usually at least 75% of the total amount of air originally supplied to the oven. The necessary make-up air is usually taken in either at the heater itself or at the fan, although it may be drawn in at the inlet or outlet of the oven itself. Ventilation of the oven is regulated by the speed of the exhaust fan and by damper adjustment.

Two types of heater are in common use; they are usually designated as "pull-through" and "push-through" heaters. In the pull-through heater gas is burned in the combustion chamber and the products of combustion, together with air returning from the oven and the necessary make-up air, are pulled through the heater and discharged into the oven by means of a centrifugal fan. In the push-through heater a centrifugal fan forces the return air from the oven through the heater and back into the oven. In this heater the make-up air is usually taken in at the fan.

With ordinary methods of oven heating, the oven atmosphere is changed about 20 to 30 times per hour. When recirculating heaters are used the number of air changes is increased to 60 or even 120 per hour. It is well known to anyone that rapidly moving air will dry anything much more quickly than stagnant or slowly moving air; the same principle applies to the operation of japanning, which is a combination of oxidation and drying.

Safety, Simplicity, Economy

The rapid spread of the recirculating heater idea in its application to all kinds of industrial ovens and even to low-temperature heat-treating operations is proof enough of the advantages of this method, which may be summed up briefly: safety, simplicity, low maintenance cost, low operating cost, and improved uniformity of temperature.

The incinerating type of heater actually burns up all inflammables present in the oven by passing them directly through the intensely hot gas flame; this not only eliminates fire and explosion hazards but also assists to some extent in supplying heat to the oven. The non-incinerating type of heater dilutes the oven atmosphere to such an extent that explosive or inflammable mixtures are not found. The rapidly moving air supplied by recirculating heaters prevents the formation of gas or smoke pockets in the oven.

The savings possible by use of recirculated heat are due to two major factors. The first of these is the fact that most of the combustion gases and heated air are returned through the ducts to the heater instead of being vented to the outside air; the second, that recirculating heaters produce the most uniform oven temperatures possible, thereby shortening time cycles and improving the quality of product. By actual tests it has been found possible not only to increase the speed of baking

SOMETHING NEW AGAIN!!!

LIGHT-FAST

(FAST-TO-LIGHT)

LACQUER SHADING STAIN

Does not bleed or fade. DRIES INSTANTLY. Made entirely from water colors assuring fastness to light and non-bleeding. A perfect blending and shading medium. May be used either directly over filler or between sealer and lacquer coats.

WATEROIL STAINS

#1900 Wateroil Rubbing Oil.

Quick Drying Fillers, Lacquer Shading Stains, Finishing Waxes, Lacquers, Sealers, Drawer Coaters, etc.

"UNQUESTIONABLE QUALITY"

WOOD FINISHING SUPPLIES

V. J. DOLAN & COMPANY, Inc.

1830 N. Laramie Ave. Chicago, Ill.

PRESDWOOD AND CELOTEX FINISHES

Four years of careful and intensive research have gone into our perfected system of lacquer finishes for Presdwood and Celotex.

These extraordinarily adaptable surfaces are becoming more and more widely used in industry. Their finishing presents certain definite problems - we have the answer.

Makers of tile, cabinets, boats, toys, refrigerators and any other industrial production utilizing these boards, will find it profitable to consult us.

Write for our new descriptive bulletin

THE VARNISH PRODUCTS CO.

CLEVELAND, OHIO

but also to decrease the baking temperature.

Uniformity of heating is obtained by the rapid circulation of air inside the oven under a constant slight pressure maintained by the heater fan. For the same reason an oven can be brought to heat much more quickly than by other methods. A better product is assured, since conditions inside the oven do not vary and each piece receives identical treatment.

It was once thought that the products of combustion had an injurious effect on the finish of japanned or enameled parts, but this fallacy has long since been dispelled. That recirculating heaters produce an unexcelled finish is best evidenced by the large number of installations made within the past few years at plants where quality comes before price. The finish of the finest automobile bodies and parts to be seen at the various automobile shows is baked by recirculating heat.—*Industrial Gas.*

Comparative Tests Showing

1. Air consumption.
2. Weight of compressed air on surface.
3. Waste of material.
3a. Comparative waste of material.
4. Penetration and adhesion.

Available in data folder H D-6270 to manufacturers interested in efficient spraygun operation.

Eclipse Airbrush Co.
Newark, N. J.

Pioneer Builders Of Air Heaters

NICHOLS PRODUCTS CORPORATION
12953 Greeley Ave., Detroit
122 East 42nd Street New York
DIVISION OF ROSS INDUSTRIES CORP.

INDUSTRIAL OVENS AND HEATERS

FOR ENAMELING, JAPANNING, LACQUERING, CORE BAKING, TEMPERING, PROCESS BAKEING AND DRYING.
—SPECIAL OVENS—
FOR EVERY FUEL AND HANDLING METHOD. WRITE FOR DETAILS.

The PAUL MAEHLER COMPANY
2220 W. Lake St., Chicago, Ill.

Spots Air Line Trouble

When the gas or the electric company renders a bill for service, you never find anyone attempting to argue with them over the amount. They know it has been figured directly from a meter reading, and one cannot argue with a meter. But has it occurred to you that meters are used for other things, as well? Flow meters, for instance, are used by many firms in their air lines, and will always tell whether compressors are actually delivering their rated capacities. If trouble develops from the air supply being scant, the flow meter will tell the story, whether the trouble is with the compressor, or with leaks in the lines, or both.—E. J. Harner.

Room Cooler Bulletin

The Trane Co., LaCrosse, Wis., is distributing an interesting, 8-page bulletin which explains, illustrates and describes several types and sizes of cooling units for domestic, commercial and industrial service—for cooling and dehumidifying the air in rooms or entire buildings.

Spray Guns for the Refinisher

Small guns for the small shop doing an occasional job that will spray like a big gun. Built to do a real job on a ¼ H. P. Spray Machine. Ask for the

MODEL G-C SPRAY GUN

Large guns for the large finishing room. Fast, economical to operate. Light in weight yet well balanced. We give you a low priced gun that will do your work second to none. Ask for the

MODEL A SPRAY GUN

furnished with clamp or screw jar or pressure feed.

Fox, Smith & Co.
98 Fifth Avenue
New York, N. Y.

THE SHARPE MFG. CO.
1356 So. Flower St.
Los Angeles, Calif.

San Francisco, Calif.
Chicago, Ill.

IMPERVIOUS

LACQUERS, VARNISHES and ENAMELS

FOR INDUSTRIAL USE

ENAMELS · IMPERVIOUS · TRADE MARK · IVCO · PRODUCTS · VARNISHES · LACQUERS

Manufactured By

IMPERVIOUS VARNISH COMPANY

General Office: Koppers Building

PITTSBURGH, PA.

New Materials and Equipment

Improved Fluid Hose

A new and radically improved fluid hose has recently been perfected by The DeVilbiss Co., Toledo, Ohio, which, under the most severe and long continued tests, has surprised even the inventors with its almost unlimited resistance to solvents which have always attacked and eventually disintegrated fluid hose in the past. Hot turpentine, the worst enemy of rubber hose, has no apparent effects on this new fluid hose.

Tests conducted in the laboratories show that the absorption of lacquer thinner by this new hose is only 1.8%, as compared to tests of ordinary composition hose which absorb 30% of lacquer thinner. Submerged in turpentine and lacquer thinner for 14 months, this new hose showed no ill effects. It resists oils of the highest penetrating qualities; gasoline, oil and grease do not swell, harden, break down or deteriorate this hose in any way.

In addition to tests for chemical effects, this fluid hose has also been rigorously subjected to physical tests. Samples taken from stock have been mechanically twisted, bent and wrenched continuously for thousands and thousands of times on a special testing apparatus without any effect on its original flexibility.

The physical construction of the hose has not been changed, but its extreme resistance to its enemies is found in a new composition which is used in the hose lining. This new composition contains but a minute quantity of rubber. Rubber, up to this time, despite its many faults and weaknesses, has been the only material which could form the basis of the composition used in the liner of fluid hose. While this new composition that DeVilbiss has put into the liner of its improved fluid hose cannot replace rubber in many of its familiar uses, nevertheless, it has been found to far surpass rubber as a material for lining fluid hose. In this particular application the most severe tests have proved it supreme.

The introduction of this new development offers a means of materially reducing one of the principal replacement costs in industrial finishing departments.

Duco Polishing Wax

A new polishing wax, completely transparent, and proved to be proof against ultra violet ray, the destructive element in sunlight, has been developed by the Automotive Finishes Division of the DuPont Company. Work on the new wax has been going on since July 1930, the purpose being to find a protective covering for Duco that would be hard, lustrous and easy to put on, while at the same time it would be extremely durable.

Wood Putty Filler

O. R. Platter of North Vernon, Ind., announces improvements in the formula for his "wood dough" which is a wood putty filler for filling worm holes, nail holes, cracks, checks and other depressions in wood surfaces to be finished or refinished. This is a material which has been on the market for 14 years. It is sold in the form of dry powder and is made plas-

CASKET LACQUERS

Production problems and new finishes for caskets are greatly simplified through the services and materials available from M & W.

These products include—

Prismlac
Grey Primer
Bronze Lacquer
Silver Lacquer
Pearl Finishes
High Gloss Top Coat Lacquer
Shading Black Enamel
Non-Penetrating Thinner
Lacquer Glazing Putty

May we send you information concerning these items?

MAAS & WALDSTEIN COMPANY

Executive Offices and Plant
430 Riverside Ave. Newark, N. J.

Chicago Office & Warehouse
1115 W. Washington Blvd.

Los Angeles Office & Warehouse
2416 Enterprise Street

Combining Quality

with HIGH PRODUCTION

SUPERIOR GALVANNEALED and SUPERIOR SUPER-METAL Steel Sheets are soft and ductile. They are easy to work with and withstand severe forming operations without fracture or injury to the coating. The spelter (zinc) is *fused* to the base metal by a *Patented Heat Treating Process.* They are far superior to ordinary galvanized sheets.

Write for Interesting New Book

The SUPERIOR SHEET STEEL CO.

(Division of Continental Steel Corporation.) CANTON, OHIO

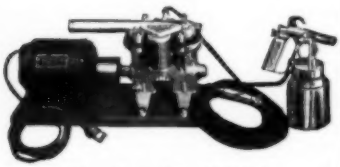
Manufacturers of: Black, Galvanized, Long-Terne and Special Coated Sheets Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence.

Superior Galvannealed

1. Has an etched or matlike surface.
2. Coating will not chip, flake or peel.
3. Withstands severe forming operations.
4. Takes paint, lacquer or enamel finishes without preparatory treatment.

"Superior Super-Metal" PATENTED PROCESS

SUPER SPRA-MORE "55"



Price Complete, $70.00

The outstanding performance of this remarkable spray painting equipment may be quickly proved in your own finishing department, doing your own kind of job, under your own working conditions. Crown has been able to assist many manufacturers in lowering finishing costs. The information thus acquired is available to you too! Write for the complete details.

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd. Los Angeles, Calif.
Boston, 105 Broad St., Newark, N. J.,
1057 Bergen St., Chicago, 551 W. Lake St.,
Houston, 1027 E. 11th St.

Compressor Users—and Compressor Manufacturers!

Our hand woven endless belts have proved exceptionally satisfactory for use on compressors and we invite you to try one in competitive test against any other belt.

They are hand woven to any specific measurement from tough, high-grade cotton fibre. They are endless; have great tensile strength; minimum stretch; grip better and wear longer .... and the cost compares favorably with other types of belts.

You owe it to yourself to make a competitive test...write today for particulars.

Universal Endless Belt Co.
North Vernon, Ind.

tic by simply mixing it with water as needed.

According to manufacturers "It is easy to use, has great adhesive qualities, absorbs stain and does not have a tendency to shrink. It can be kept indefinitely in its dry powder form state, and only such quantities mixed as may be wanted for immediate use. Its adhesive qualities have been improved; it holds fast in wood whether it be a knot hole, crack or other defect."

Two-Ply Stainless Steel

Announcement has just been made by the Ingersoll Steel & Disc Co., Chicago, (a division of the Borg-Warner Corporation), of a commercially successful two-ply stainless steel—"Ingoclad Stainless Steel,"—produced by a patented process from the composite ingot. Ingoclad may be deep drawn, stamped, welded, formed and polished. It will be sold at a price that will permit its use in many applications where solid stainless steel would be prohibitive in cost. There is a perfect bond between the stainless surface and the carbon steel back.

"Hydrowax Liquid"

Glyco Products Co., Inc., Bush Terminal Bldg., No. 5, Brooklyn, N. Y., announces that the coating of metal, rubber, leather, straw, paper, plaster of paris and other compositions is now being done with a water wax emulsion which contains no oils or inflammable solvents. Not only is the finish protected against weathering but the cost of this finish is less than that of lacquer or varnish. It is being done by "Hydrowax Liquid," which may be applied by brushing, tumbling, spraying or dipping. When an extremely bright finish is desired light buffing or tumbling is recommended.

In finishing automobiles, if any lacquer enamel gets on any of the nickeled parts, lacquer thinner will quickly and easily remove it.

Questions and Answers

Silk Screen Methods

Please send us sample copy of INDUSTRIAL FINISHING together with all the information you can about silk screen method of sign painting.—B. B. L. Co.

Articles on this subject appeared in the following issues of INDUSTRIAL FINISHING:

Year	Month	Page
1928	Aug.	89 - 93
1928	Sept.	42 - 44
1929	Nov.	42 - 44
1930	May	46 - 50
1931	Jan.	14 - 18

Baked Enamel on Aluminum

Will you kindly send me information about how to apply baking enamel to aluminum alloy? I am especially interested in learning the correct baking time and the correct methods of applying enamel for best results?—N. B

If possible find out what the alloy contains. Look out for die-cast aluminum. The least heat on this will sometimes cause bubbles of metal to appear. Aluminum alone will stand a high heat, therefore, I advise finding out first what the alloy contains, and how much heat it will take.

Try baking a piece in the raw and see what it will do. The correct time to bake it depends on the stock used. Your paint dealer is perhaps the best one to consult about this. Proceed as in ordinary enameling—that is, spray, brush or dip the finish and then sand or rub between coats. If the surface is real smooth scratch brush or sandblast it first; roughen the surface in other words. This will cause the enamel to adhere better.

If I could have a sample piece of the metal I would be glad to enamel it and send it in. This is really the best way, as then you are not "going it blind."—FRED MANNHARDT.

No very definite answer can be given to this question without first knowing the composition of the aluminum alloy, its melting point, etc. Aluminum alloys are sometimes very hard to finish in a satisfactory manner because the alloy has a slight greasy feel that seems to prevent the enamel from adhering tightly. As a general statement, about the best system of cleaning the metal ready for enameling is to dip the alloy momentarily into a slight caustic solution which will slightly attack the aluminum in the alloy. Then

the caustic solution should be immediately rinsed off with clean water and the surface thoroughly dried.

It is important to notice that alloy can be left in contact with the alkali solution only for a short length of time; otherwise the aluminum will be "eaten" by the alkali. Sometimes it helps to bake the alloy at a slightly higher temperature than the enamel is to be baked, but before the enamel is applied. This seems to get rid of a portion of the surface grease and allows the enamel to adhere better. When the caustic treatment is followed by the baking method referred to above, and when the proper type of baking enamel is used, very good results can be secured.—R. L. MASTERSON.

Tumbling Golf Tees

Please inform us as to what method or methods are being used successfully in finishing golf tees. One of our customers here has put the problem to us, and although we believe that a tumbling process might be logical, we do not have available sufficient complete data in order to fully satisfy ourselves as to whether a better system might not now be in use in some of the Eastern factories. —N. L. Co.

One of the best methods of finishing golf tees is by use of one of the centrifugal type of washing machines wherein an inner basket can be made to spin very rapidly to throw the excess water out of the clothes before they are hung up for drying. In using such a washing machine for finishing golf tees, the tub (which ordinarily contains water) is filled with reduced lacquer of the proper shade up to a point where the spinning tub, when lowered to the bottom of the water compartment, will be immersed about half way into the lacquer.

A quantity of tees are thrown into the inner basket, which is lowered into the lacquer and allowed to stand for a moment so that all of the tees will become coated and a part of the absorption or suction of the wood will be satisfied. The inner tub is then raised and allowed to stand momentarily for the greater portion of the lacquer to drip off through perforations in the bottom and side of this tub. Then the inner tub is started spinning for a minute or two whereupon the tees tend to travel to the outside edge of the tub and up the side.

After spinning for a moment or two the tub is stopped and the tees are raked down again into the bottom of the tub before the lacquer has dried sufficiently to cause the tees to stick tightly together. After raking the tees down into the bottom of the tub it is again started spinning for a few minutes, during which time the lacquer becomes dry enough that the tees will no longer stick to each other. The tees are then dumped into a tumbling barrel, containing shavings, scraps of paper and some paraffin wax, and are tumbled for a short time to smooth up the lacquer finish and to impart a lustrous finish to the tees.

There is also now on the market a patented centrifugal machine for coating; it operates somewhat along the same principle as the washing machine referred to, but it has been designed entirely for use in coating all kinds of objects. In this machine the entire center basket can be completely filled with tees and the lid clamped down tightly. An auxiliary pump

then pumps the lacquer enamel into this enclosed compartment from an outside reservoir under great pressure.

After the compartment has been filled with lacquer, a release valve is turned and the lacquer is allowed to drain back into the reservoir. Immediately thereafter the inner tub is started spinning at a very high rate of speed and will need to spin only about 30 to 60 seconds in order to thoroughly dry the lacquer on the tees. After the inner tub has been stopped, the vapor type cover is removed and the tees taken out for polishing, in a manner similar to that described above. Then a fresh basket of tees can be placed in the machine and the process repeated. In this way tens of thousands of tees can be coated at one time in a satisfactory manner.— W. H. MARTINDALE.

Boat Finishing Again

In July issue I notice G.A.W.'s question about "Boat Finishing," pages 38 and 39. There is no better wood than cedar, and no material better than white lead for coating—so far as I know. Of course, the number of coats to use is up to the boat builder. It is always better to put on more and thinner coats for a good job. For a first coat I suggest a paint made up as follows:

White lead	100 lbs.
Linseed oil	4-gals.
Turpentine	2-gals.
Drier	1-pint.

This will cover around 5000 sq.ft. of surface. For the second coat use:

White lead	100 lbs.
Linseed oil (raw)	1¼-gals.
Turpentine	1¼-gals.
Drier	1-pint.

This will cover above 3000-sq.ft. For a finishing coat, use:

White lead	100 lbs.
Spar varnish	½-gal.
Turpentine	2-gals.

This will cover around 3000-sq.ft. and leave a dull finish. For a gloss use about 3-lbs. of soft paste lead and thin with one gallon of pale spar varnish.

Today there are several deck enamels, and specially made boat enamels that can be used for a final coat for the bottoms or below the water line. I recommend a regular paint made for this purpose; it will wear well under water and will not foul as other paints do. I have used a paint of this kind but don't recall its trade name or the name of the manufacturer. For the cheaper boat I suggest a coat of white lead and a coat of deck enamel. I believe this would do very well for both the inside and outside. The insides of the better boat should have at least three coats of good spar varnish.—J. K. COOPER.

Nail Hole Filler

In reference to the nail hole filler, as mentioned on pages 43 and 44 of June issue, there are various products on the market for this purpose. Some of them come under the name of "cold water putties"; some are "crack fillers" which are also mixed with cold water; other fillers are already mixed and come colored in mahogany and other natural wood shades.

I have found a mixture of shellac and whiting makes a very good and quick putty for nail holes and dents. Cut your shellac according to the way you want your putty to harden. A putty made with pure shellac will be so hard that it is almost impossible to sand it afterward. Mix only enough at a time for immediate use, as it hardens very quickly. You can color your putty to any shade with stains soluble in alcohol.—J. C. COOPER.

Industrial Finishing
MAGAZINE

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

PRACTICAL PUBLICATIONS, Inc.
Publishers

Office; 802 Wulsin Bldg., Indianapolis, Ind. Telephone, Riley 6771. President, A. T. Gaumer; Vice-President and Managing Editor, W. H. Rohr; Secretary, R. E. Sults; Treasurer, E. A. Dosch.

Subscription rates, $2.00 per year in U. S. and possessions; $3.00 per year in Canada and other foreign countries.

Advertising rates on application.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

REPRESENTATIVE WANTED

We can offer a very attractive proposition to a first-class industrial paint salesman. Address IF-434, care Industrial Finishing.

INDUSTRIAL SALESMEN

Well established manufacturer of complete line of industrial varnishes, lacquers, enamels and synthetic products. Have openings, Jamestown, Cleveland, North Carolina and Boston. Proven producers only need apply. Address IF-435, care Industrial Finishing.

BARGAINS

Demonstrator Paint Sprays, ½ price. Like new, guaranteed, factory reconditioned, gasoline or electric, completely equipped. 5-days' Trial—Money-back guarantee—one-fourth down, balance terms. KEN'S EQUIPMENT EXCHANGE, Box F-82, Troy, Ohio.

Letters

(Continued from page 6)

was appointed to consult with other exhibitors in the Mart not present at this meeting, and with the other market centers, with reference to the postponement of the January, 1933, Market. The committee of exhibitors has recommended to the Board of Governors of the American Furniture Mart that due to lack of cooperation of other market centers, the market be held in the American Furniture Mart as originally planned from January 3 to 14, 1933.

The Board of Governors, therefore, confirms its earlier announcement that a market will be held at the American Furniture Mart from January 3 to 14, inclusive.—Oscar Klamer, Chairman, Board of Governors, American Furniture Mart.

Finish for Glass Jars

In June issue of INDUSTRIAL FINISHING we notice among some of the letters received from your readers that "R. E. P." (pages 6 & 36) is interested in obtaining a finish for application on glass jars.

For years we have been manufacturing flexible enamels, which may be applied directly on glass with very unusual flexibility and adhesion, and we wish to bring this point to your attention so that you might suggest he get in touch with us—or if you will be good enough to refer his entire name and address to us we shall be pleased to take it up with him directly. This material is a lacquer enamel that dries in ordinary "lacquer time" and has the adhesion and flexibility as shown on the sample we are sending you.—R. F. L. Co.

Finishing Equipment Wanted

I am in need of some appliances for printing, dyeing and lacquering wooden rulers (both folding rulers and others; also levels, etc). A manufacturer of my acquaintance wishes to modernize his plant, and wants to procure the necessary machinery for the above purpose. I suggest that the makers of the machinery or appliances send me full quotations, so I will know the prices and can tell my prospects.—Carl G. E. Herklotz (Import & Export) Berlin-Lichterfelde, Unter Den Eichen 65, GERMANY.